MODIFIED

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ABSTRACT

This support paper elaborates on the process of producing my MFA thesis film *Modified,* a feature-length, first-person documentary that questions why genetically modified organisms (GMOs) are not labeled on food products in Canada and the United States, despite being labeled in 64 other countries around the world. The film is anchored in the rich food legacy passed on to me by my mother who was a prolific organic gardener and seed saver, a true *gourmande*, and a passionate food activist who believed we should know how our food is produced. Shot over a span of nine years, the film follows the citizen-led movement to label GMO foods in Canada and the United States, questioning the cozy relationship between the biotech industry and our governments. Ultimately, the film makes the case that people should have a right to know what is in the food they eat.

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It would not have been possible for me to complete this research without the constant encouragement of my sister, Ariell Vincent, my stepdad, Gary Collins, my dad, Guy Melançon, as well as my Executive Producer on this film, Camelia Frieberg.

DEDICATION

I would like to dedicate this film and thesis project to my mom, Jali Giroux,

who always sought answers to tough questions, fought for a more peaceful and just world,

and passed on her deep love of food and social activism.

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"We tell stories to continue ourselves."

- Ken Burns

For as long as I have been interested in film production, I've wanted to make a film about GMOs. It's difficult to articulate exactly why this is, even today. Food has always been a source of pleasure, reflection, and a creative outlet. As my mother points out in one of our conversations, food is a cause for celebration. There is something about the genetic altering of living organisms for food production that got its hooks into both my mom and me, causing us to continuously doubt, question, and investigate the implications of genetically engineering our food. Making this film was never really a choice; it was something I had to do.

The genetic engineering of our food raises diverse and complex issues that can be looked at through many different lenses. On a scientific level, one can ponder the possible ramifications of manipulating DNA in a way that has never occurred in nature, even as our understanding of genomes is relatively new and continuously evolving. On a legal / environmental / social justice level, there are the profound implications brought on by the patenting of genetic material, seeds, and living things. This corporate ownership of living organisms affects a farmer's right to save and replant seeds and leads to questions around genetic contamination, self-sufficiency, and the biopiracy or biological theft of genetic material from indigenous cultures and developing countries. On a technological level, there is the question of yields and productivity and how to best grow food for a fast-growing population expected to reach nine billion by 2050. One can

also investigate the far-reaching impacts of increased pesticide use and the pesticide treadmill that accompanies the proliferation of herbicide-resistant and insecticide-producing seeds which make up the vast majority of GMOs currently on the market. Genetic engineering is an infinitely vast topic which raises all manners of problems. It can be approached from many different angles but for me, GMOs hold a special place of fascination because they reside at the intersection where food issues meet issues of governance, democracy, and civic engagement. I can trace back my interest in these converging issues when I look back to my mom's own interest in food and farming coupled with her passion for politics and activism. Ultimately what fascinated us both was the secrecy with which GMOs were introduced into our food supply and the ways in which the corporations that produce them have attempted to influence our food policies and sway our government agencies and regulatory systems. As an aspiring organic farmer, the other angle I have explored is the impact of GMO agriculture on farming at large, which serves to entrench our food production system into a model of large-scale industrial farming dependent on corporations for seeds and chemicals. My research has primarily focused therefore on some of the ways GMOs affect our political processes and our modern agriculture practices.

As I was embarking on the process of making this film about nine years ago, the documentaries I had seen on GMOs (*The Genetic Takeover* (2000), *The Future of Food* (2004), *The World According to Monsanto* (2008) - and later *Genetic Roulette* (2012) and *All of Us Are Guinea Pigs Now* (2012) raised fascinating questions about the profound and multiple implications of genetically engineering living organisms to produce our food. Though they are meticulously researched, I found that these films rarely made a meaningful connection with the intimate act of cooking and eating, and the very personal intrusion that GMOs represent on this daily human

transaction. Further, I didn't find these essay films to be particularly compelling in their cinematic and narrative approach. It wasn't until Jeremy Seifert's 2013 film, *GMO, OMG* that a film successfully brought GMOs into the personal realm, which is what I have also attempted to do with *Modified*.

Food is a cultural, personal facet of our lives that shapes and defines who we are. Many of us have childhood memories around foods, whether they are foods that comforted us when we were not well, of foods that represented certain celebrations or traditions that marked certain seasons. The act of cooking is not only about feeding ourselves but it is a creative expression of who we are, of our taste, of our culture, of our geography, of our ancestry. It reflects our identity, where we come from, and where we've been. When we cook for others (or for ourselves), it is a way to express love and caring for the eater. I find it impossible to talk about GMOs without first acknowledging the significance of food in our lives.

I have often wondered why so many people, including the people in my closest circles of friends and family, seem disinterested in the topic of genetic engineering. I have a few ideas on possible reasons for this. First, the topic is intimidating and complex and it's hard to know which sources to trust. Some of the conversations around GMOs have used science to exclude anyone who does not have a scientific background, making them feel that they are not entitled to take part in the discussion. Secondly, the debate is so polarized that people often feel there is no nuanced way of entry into the issue, no grey space for them to step in and begin exploring the issue on their own terms. Thirdly, in order to feel the need to discuss genetic engineering, we need to first be willing to take a hard look beyond the immediate enjoyment food gives us or the necessary fuel it

provides to our bodies. This is not always easy. To question what mechanisms or processes brings food to our dinner plate requires stepping back from an action which is at once necessary to our survival and also a basic source of great pleasure. It's hard to challenge such a crucial and comforting part of our lives with complicated questions. Margaret Visser also describes a long-standing cultural reluctance to talk about food in her book *Much Depends on Dinner*:

> Food used to be thought too "low" a subject for intellectual rumination, a merely animal pleasure, a necessity that, once we had secured sufficient supplies of it, was too obvious and too crude for discussion in public. (5)

Nowadays, food scrutiny has exploded with books and films exploring practically every aspect of modern-day food production. But it is often with an uneasy self-consciousness and at times sensationalism that we look at food. In North America, we are at the epicenter of short-lived fad diets (over $66 billion is spent each year on weight-loss diets)[1], a probable reaction to what most people inherently know to be a highly dysfunctional food system, one that subsidizes cheap processed foods and its accompanying ills: obesity, diabetes, heat disease, cancer. Instead of tackling the root of our destructive agricultural and overall food processing systems, we demonize certain food groups: wheat, gluten, grains, dairy, meat, fat.

While we live in a moment in time when we are surrounded by food porn, cooking shows, and chef competitions showcasing flashy food and flashier personalities, people have paradoxically suffered from an overall societal de-skilling represented by the loss of basic cooking skills such as how to make bread or yoghurt. This is particularly evident in areas where people's traditional

[1] Alice Park, "Which Fad Diet is Best for Weight Loss", Time Magazine. http://time.com/3578729/diet-atkins-south-beatch-weight-watchers-or-zone/ Accessed September 4, 2016

diets have gradually been replaced by ready-made processed foods, and food preparation has been largely de-valued in favour of more convenient, "modern" ways of eating. Even more alarming is that there are far fewer farmers than ever before. The "get big or get out" agricultural policies established by American Secretary of Agriculture Earl Butz in the 1970s[2] have remained in place for over 40 years, in Canada as much as in the United States[3]. As George Naylor points out in my film, *"It has meant that our rural communities have collapsed. There are so few farmers left"*. While there is a real and growing movement to eat more local and sustainably-grown food, the glossy world of food porn does not often intersect with the world of ethical eating. Food films that question the entire premise of our food system have gained in popularity (*Food Inc.* (2008), *Fed Up* (2014), *Forks Over Knives* (2011), *Supersize Me* (2004)), yet it is risky to publicly question or criticize how food gets to our dinner plate because, like parenting or religion, food can be a touchy, sensitive, personal topic that makes people easily bristle and feel judged. Most people know that there is something deeply wrong about how our food system works, but it requires too much work to truly delve into the nitty gritty of it all and acknowledge how intimately intertwined with it we really are.

It was in France that I first witnessed a culture truly connected with the source of its food that possessed a deep sense of pride and a quasi-obsessive relationship with its culinary traditions. Without this sense of connection to food, it is hard for North Americans to care enough about GMOs to attempt to unravel the cornucopia of complex issues they bring up. A close friend of mine phrased it clearly one day when he stated that he personally didn't care, nor have the time

[2] *The Seer*. Film. Directed by Laura Dunn (2016)
[3] Tom Philpott, "A Reflection on the lasting legacy of 1970s USDA Secretary Earl Butz", Grist, 2008 www.grist.org/article/the-butz-stops-here/. Accessed September 1, 2016

to think about GMOs but that he was curious to know why I was so preoccupied with them. “I have no inherent interest in seeing a film about GMOs.” he told me, “Therefore, if I’m to watch your film, I need to understand why this matters to you. Show me why *you* care. When I see it through your eyes, it will then matter to me”.

My intention with this film is therefore to create a film where the political and the personal intersect. Through my own personal story and preoccupation with the topic, I hope to bring people into a complicated issue that many might prefer not to think about.

BACKGROUND

GMOs: Even their definition is a subject of controversy

Genetic engineering refers to the altering of a living organism's genome using techniques of biotechnology, including the transfer of genes from one species into another. Even the definition of genetic engineering is a subject of controversy as there has been a concerted effort by the biotechnology industry and some government agencies to trivialize genetic engineering by putting in the same category as conventional breeding. The claim is repeatedly made that genetic engineering is simply an extension of conventional breeding, which is scientifically inaccurate. A good explanation is provided by Dr. Michael Hansen, Senior Scientist at Consumers Union:

> Conventional breeding employs processes that occur in nature, such as sexual and asexual reproduction. The product of conventional breeding emphasizes certain characteristics. However these characteristics are not new for the species. The characteristics have been present for millennia within the genetic potential of the species.
>
> Genetic engineering works primarily through insertion of genetic material… This insertion process does not occur in nature. A gene "gun", a bacterial "truck" or a chemical or electrical treatment inserts the genetic material into the host plant cell and then, with the help of genetic elements in the construct, this genetic material inserts itself into the chromosomes of the host plant. Engineers must also insert a "promoter" gene from a virus as part of the package, to make the inserted gene express itself. This process alone, involving a gene gun or a comparable technique, and a promoter, is profoundly different from conventional breeding, even if the primary goal is only to insert genetic material from the same species. (Michael Hansen)

It is fascinating to note that Health Canada's website feeds into the confusion around this issue. In its glossary, it defines genetic modification and genetic engineering as follows:

> **Genetically Modified**:
>
> An organism, such as a plant, animal or bacterium, is considered genetically modified if its genetic material has been altered through any method, including conventional breeding. A "GMO" is a genetically modified organism.
>
> **Genetically Engineered:**
>
> An organism is considered genetically engineered if it was genetically modified using techniques that permit the direct transfer or removal of genes in that organism. Such techniques are also called recombinant DNA or DNA techniques. (www.hc-sc.gc.ca)

Therefore, according to Health Canada's definition of a GMO, any of the plants we grow in our farms or gardens and find in our grocery stores would be considered genetically modified, since they have all undergone some form of conventional breeding (ie: conventional methods of plant breeding based on selection and intercrossing have been used for thousands of years and have resulted in the vast majority of the foods we eat today[4]). Technically, it is not inaccurate to say that we have been "genetically modifying" plants for millennia, but Health Canada's extremely broad definition of a GMO is not in line with other countries and regulatory bodies and as such further contributes to an already existing confusion within the Canadian public. A more precise and less misleading definition can be found on the World Health Organization website:

[4] "Here's what your food would look like if it weren't genetically modified over millennia", Business Insider, August 25, 2015, http://www.businessinsider.com/foods-before-genetic-modification-2015-8

> Genetically modified organisms (GMOs) can be defined as organisms (i.e. plants, animals or microorganisms) in which the genetic material (DNA) has been altered in a way that does not occur naturally by mating and/or natural recombination. The technology is often called “modern biotechnology” or “gene technology”, sometimes also “recombinant DNA technology” or “genetic engineering”. It allows selected individual genes to be transferred from one organism into another, also between non-related species. Foods produced from or using GM organisms are often referred to as GM foods. (www.who.int)

In my film and in this paper, I follow the World Health Organization’s definition of a GMO and use the terms genetically modified organism (GMO) and genetic engineering (GE) interchangeably as they do.

A Brief History of GMOs

The world’s first GE food came on the market in the United States in 1994. It was a tomato genetically engineered to ripen without softening, making it easier to pick at a later stage of maturity, thus facilitating shipping and extending its shelf life. Calgene, the company that created the tomato, anticipated a skeptical public since it was the first GE food on the market. The company opted to proceed with transparency and clearly identify the tomato as a product of genetic engineering on the label. As Dr. Belinda Martineau explains in her interview, *“It was the only GMO to ever be voluntarily labeled in the United States”*.

Figure 1: Film still from *Modified:* Flav'r Sav'r tomato labels

But the Flav'r Sav'r tomato was a commercial flop and was withdrawn from the market not long after it was introduced. It was never sold in Canada. In the subsequent two years, several new GMOs were introduced into both the American and Canadian food supply: primarily with canola, soy, and corn. Currently, there are four GE crops grown in Canada: canola, corn, soy and sugar beet. Canola grown in Canada is 95% genetically modified, sugar beets are almost 100% genetically modified, grain corn is approximately 80% genetically modified, and soybeans are more than 60% genetically modified.[5] Other GMOs that are not grown in Canada but may be present on grocery store shelves are cottonseed (used for oil), alfalfa, papaya, squash, and eggplant. A GE apple was recently approved though it has not yet hit grocery store shelves, as well as the first GE animal (salmon) which many grocery chains have announced they won't carry. It is a common misconception that many other food products are genetically engineered. In

[5] "Where in the World are GM Crops and Foods?" Canadian Biotechnology Action Network, March 19, 2015 http://gmoinquiry.ca/wp-content/uploads/2015/03/where-in-the-world-gm-crops-foods.pdf

fact there are not that many different GMOs currently on the market. However, because derivatives of soybeans, corn, sugar beets, and canola are frequently used in food manufacturing and to feed animals for meat, dairy, and eggs, GMOs are present in the majority of the processed foods we eat.

When the first GMOs came onto the market in Canada around 1996, I had just turned 19 and for the first time in my life, I was responsible for buying my own food. So in a way, I came of age at the same time as GMOs. The beginning of my adulthood marked the beginning of a new paradigm in food production and our knowledge of what was in the food we were purchasing at the grocery store. I found it disturbing that GMOs were not labeled on food products. It was therefore difficult to opt out of eating them.

Today, 64 countries around the world label GMOs. If you count the United States' recently passed GMO disclosure law (an area of contention since it has been called a "fake" labelling law by many American politicians)[6], that number increases to 65 countries and leaves Canada as the only industrialized country in the world not to label GMOs.

When I began filming on this project in 2008, Canada was considering a federal GMO labelling law introduced as a Private Member's Bill by Bloc Québécois Member of Parliament Gilles-André Perron. In fact, his was one of my first interviews for the film. The bill was voted down that same year, despite all the major polls showing that over 80% of Canadians were in favour of GMO labelling. Almost all Conservatives voted against the measure, about 70% of Liberals also

[6] In the July 6, 2016 American Senate Sessions, Senators referred to the bill as a "fake" and an "obstacle course". Senator Boxer said "It's not a labelling bill, it's a phony sham." www.c-span.org

voted against, while almost all Bloc and NDP members voted in favour. I was deeply disappointed that our government would vote against something that the general population overwhelmingly supported and this first failure of a GMO labelling bill was what introduced me to the notion that when it comes to biotechnology, our governments are putting the interests of industry above those of citizens.

In Canada, the regulation and approval of GMOs is a shared responsibility between Health Canada and the Canadian Food Inspection Agency. In the case of GE animals (such as the recently approved GE salmon), Environment Canada is also involved in the regulatory and approval process. Canada has a policy of *voluntary* GMO labelling, which is essentially a non-labelling policy. We know this because not one single company has ever opted to *voluntarily* label a product as containing GMOs in Canada, since there is no incentive for them to do so.

Figure 2: Film still from *Modified:* Health Canada building in Ottawa

GMOs: What's the Problem?

> "Seeking a technological food fix for world hunger may be… the most commercially malevolent wild goose chase of the new century."
>
> – Dr. Richard Horton, editor of the British medical journal, *The Lancet*

My motivation for making a film about GMOs is not to claim that there is a problem with genetic engineering itself. Genetic engineering is a technology that has many useful applications, furthering our understanding of genomes and advancing medical research. The main problem I'm interested in exploring lies in the carefully constructed narratives we've been told about how safely GMO foods are being regulated by our government agencies, how necessary they are to feed the world, and how beneficial they are for agriculture. When one looks at who benefits from GMOs, it's clear that it is a handful of large companies making billions of dollars in profits from the sale of seeds and their accompanying pesticides. Some will argue that farmers also benefit from higher yields and having to spray less. However, both of claims have been debunked in numerous studies, though they still persist in the general consciousness and the adopted GMO narrative.[7][8][9] In fact even the US Department of Agriculture (USDA) acknowledges the absence of yield gain from GE crops in a 2002 report, stating:

[7] "Sustainability and innovation in staple crop production in the US Midwest", www.tandfonline.com/doi/abs/10.1080/14735903.2013.806408 Jack A. Heinemann (June 14, 2013)
[8] "Impacts of genetically engineered crops on pesticide use in the U.S. -- the first sixteen years", Environmental Sciences Europe www.enveurope.springeropen.com/articles/10.1186/2190-4715-24-24 Benbrook (2012)
[9] "Failure to Yield, Union of Concerned Scientists", www.ucsusa.org/sites/default/files/legacy/assets/documents/food_and_agriculture/failure-to-yield.pdf (April 2009)

> GE [genetically engineered] crops available for commercial use do not increase the yield potential of a variety. In fact, yield may even decrease…. Perhaps the biggest issue raised by these results is how to explain the rapid adoption of GE crops when farm financial impacts appear to be mixed or even negative. (Fernandez)

A more recent USDA report in 2014 states:

> Over the first 15 years of commercial use, GE seeds have not been shown to increase yield potentials of the varieties. In fact, the yields of herbicide-tolerant [HT] or insect-resistant seeds may be occasionally lower than the yields of conventional varieties if the varieties used to carry the HT or BT genes are not the highest yielding cultivars, as in the earlier years of adoption. (Fernandez)

Debunking the "increased yield" myth is something I struggled with for a long time. I knew it was a crucial point to make but I didn't want to do it by bringing up studies and expert talking heads. I felt that the only person who could credibly and compellingly talk about the yield myth would be a farmer. In the very final stages of editing, I finally decided to travel down to Penn Yann in New York to interview a grain farming couple, true pioneers in the organic agriculture movement. I had heard them speak at a grain grower's conference a few years before and they were prominently featured in Dan Barber's book *The Third Plate*. They were able to eloquently provide the missing elements I needed to debunk not only the yields myth but the argument that we need GMOs to feed the world. This last one is a complicated and fascinating topic, one that deserves an entire film. I didn't want to go into too much detail since to do the subject justice, one would have to travel more extensively to gather testimonies from different countries, but I did want to touch on it briefly and acknowledge the elephant in the room, the final lingering question that seems to always be on people's lips: but don't we need GMOs to feed the world??

Much of my research has focused around the "right to know" movement and tremendous hurdles that prevent mandatory labelling from happening in Canada and the US (namely, industry interests and the power they hold). I chose to approach the film primarily from this angle for a few reasons. One is that GMO labelling is accessible to most people. It's a consumer's rights issue and therefore an easy way into a topic for people who might otherwise not be interested in considering the issues. GMO labelling is a no-brainer. Most people want it, and it seems like a reasonable, logical thing to have in a democratic society. The fact that GMO labelling has encountered such resistance troubles people because it reveals the inherent dysfunction and corporate influence of our political system. I like to use it as a way to explore other issues.

Much of my research has focused on the inadequacy of our regulatory agencies and an infamous report released in 2001 by the Royal Society of Canada. The report was commissioned by the Canadian government in 1999. At the government's request, the Royal Society of Canada struck an expert panel whose goal it was to evaluate how well GMOs are regulated in Canada. When the report was released, the Toronto Star called it a "*polite but scathing indictment – of the industry, the academic research community and, particularly, of the federal government itself.*"[10] The report highlighted the secrecy and lack of transparency in our regulatory system, as well as the absence of peer-review and public access of the corporate science upon which GMO approvals are based. The report called into question the scientific validity of the principle of "substantial equivalence" (the concept that there are no unique risks associated with the process of genetic modification and therefore no need for a unique form of regulatory oversight for

[10] Thomas Walkon. 2001. Genetically modified foods get a roasting, The Toronto Star. February 6.

GMOs). In my interview with him, Andrew Kimbrell makes an excellent point about the concept of substantial equivalence, which unfortunately did not make it into the film:

> When genetic engineering came online, if you're the industry, you want to avoid any regulations, any new laws in the United States especially. So they come up with a theory. We know that in every cell of a GMO there's novel bacteria, there's novel viruses, novel genes from foreign organisms that have never occurred before in nature. So that was a problem. You'd think they'd have to say, "Well, jeez, we've got a flounder gene in a tomato, we need to take a look at what happens to this new combination. Is it safe? What happens to the environment?" They didn't want this. So they said, "You know what? Biological elements that are put into another biological organism, they're substantially equivalent, as long as it's still a tomato, as long as it's still a potato. As long as the corn still looks like an ear of corn, it's substantially equivalent." We're not gonna say that because there are new biological elements in it, it's changed in any fashion. So we're not gonna ever look at the process by which you get that gene in there, or what the gene does inside of it. We're gonna say, "Hey the corn is the same, and that gene is the same, therefore it's all substantially equivalent to a normal ear of corn."
>
> At the same time the industry was saying that, they were going over to the patent office and saying we're gonna patent this completely novel (because you can't patent anything unless it's novel) never seen before corn that has got this Bacillus thuringiensis organism in it, and it's got an agro-bacterium that's making it work, oh and a turn-on / turn-off virus, oh and a marker system, this antibiotic marker system, all this is in it and we're patenting every element of it and the corn. But to the public they were saying nothing new here, nothing new here, it's substantially equivalent. So it's completely hypocritical. All of their patents are based on the fact that it's completely novel, and all of their public relations is based on the fact that there's nothing new here, don't worry.

The Royal Society report made 53 recommendations to the federal government in order to bring our regulatory system in line with sound science, transparency, and the precautionary principle.

To this day, according to the Canadian Biotechnology Action Network, only two out of the report's 53 recommendations have been implemented.[11]

The Royal Society of Canada report was in direct conflict with many of the claims made by the Canadian government. For instance, a pamphlet entitled *Food Safety and You* (sent to every household in the country in 2000 in an unprecedented display of governmental public relations work that cost taxpayers $2.5 million)[12] made the following claim:

> These foods go through a rigorous and thorough review process before they can be introduced in the marketplace. (4)

However, a year later, the Royal Society of Canada report[13] contradicted this claim by stating:

> After reviewing the relevant documents and holding discussions with Health Canada personnel, it appears to the Panel that no formal criteria or decision-making framework exists for food safety approvals of GM products by Health Canada. Decisions are largely made on a case-by-case, ad hoc basis. (37)

In his book, *In The Chamber of Risks*, William Leiss details the lack of public participation and the secrecy with which our regulatory system was established in the early 1990's:

> Moreover, the chosen regulatory framework was constructed in a secret dialogue between industry and government officials; the public was invited in, and introduced to the subject, only after the fact, after governments were already committed to its basic structure. For example, the first major public consultation exercise on plant biotechnology regulation held by the Canadian federal government took place in 1993,

[11] "Genetically Modified Organisms and Precaution: Is the Canadian Government Implementing the Royal Society of Canada's Recommendations?" The Polaris Institute (2004)
[12] "Are GM Crops and Foods Well-Regulated?", Canadian Biotechnology Action Network http://gmoinquiry.ca/wp-content/uploads/2015/12/Are-GM-crops-well-regulated-E-web-singles.pdf (December 2015)
[13] "Elements of Precaution: Recommendations for the Regulation of Food Biotechnology in Canada" Royal Society of Canada, Expert Panel on the Future of Food Biotechnology (2001)

> when the federal regulatory framework had already been fully articulated within the bureaucracy. Moreover, the structure of this so-called "consultation" consigned most of the issues of interest to the public to a separate "special session on non-regulatory issues," the very name of which indicated that whatever was discussed there would have no impact on the design of the regulatory system itself. These self-imposed limitations on regulatory responsibility also inhibited Canadian federal departments from freely engaging the public in discussions on a wider range of issues: no communications programs from these departments to date, dealing with products of the new biotechnology, has included a balanced account of risks and benefits, and controversial issues often elicit a response from "official spokespersons" that is either confrontational or merely inarticulate. (22-23)

Leiss goes on to argue that the Canadian government has failed in its duty to foster healthy public debate on this issue:

> First, there is a notable lack of balance in the presentation of biotechnology on the federal government information sites, where the dominant tone is one of advocacy for the technology. There is much more material on benefits than on risks, by a wide margin; when public concerns are alluded to, usually no clue is offered as to what the nature of the concern is. [He refers to a document on the CFIA website "General Questions and Answers on Biotechnology." He also refers to the 1998 federal Canadian Biotechnology Strategy. There are five fact sheets including one entitled "Biotechnology: The Benefits" but there is not a corresponding one on risks]. (32)

Leiss further argues that North American governments have essentially acted as the "dedicated publicists" of the biotechnology industry and that "science" is used as a weapon against critics instead of a way to foster dialogue. By referring to the regulatory framework as "science-based", the implicit suggestion is made that anyone who would ask for GMO labelling would be against "science-based" evaluation. This couldn't be further from the truth. Most proponents of GMO labelling have a strong desire to see more science, but science that is independent from industry

and can be trusted to not be tainted by financial interests. In effect, the Canadian government and promoters of GMO products make an assumption that calling our regulatory system "science-based" is the only justification needed, and no further debate is warranted. Leiss argues that:

> This mode of representation inhibits rather than encourages reasoned public dialogue, and as a result, both the plant biotechnology industry and the North American governments which have acted as its dedicated publicists have blocked the development of an educated and informed public awareness with regards to these issues. (33)

The Journey to GMO Labelling

Over the years I made this film, I tried to document the long journey to achieve GMO labelling in Canada and the US and what it reveals about the corporate influence on our political system. When the last GMO labelling bill was introduced in Canada was 2008, it was voted down by a vote of 101 to 156. For the first time since then, a new GMO labelling bill has been recently introduced in the Canadian parliament. On June 14th, 2016 Canada's youngest Member of Parliament, Pierre-Luc Dusseault, introduced bill C-291 which proposes to make GMO labeling mandatory across Canada. The bill will be up for parliamentary debate this winter and could be voted on as early as spring of 2017. One of my plans is to use my film as a way to mobilize public engagement around this bill to pressure MPs across Canada to vote in accordance with what the overwhelming majority of Canadians want (polls have consistently shown that between 80% to 90% of Canadians are in favour of mandatory GMO labelling).[14]

In the United States, corporate influence over the political system has been evident at every step of the fight for GMO labelling. I document in my film how $50 million of corporate money

[14] Oliver Moore, "Poll Shows Huge Support for GMO Labelling" Globe and Mail (December 3, 2003)

prevented California from becoming the first state to achieve mandatory GMO labelling back in 2012. Four years later, biotech and big food industries spending skyrocketed to a total of $400 million spent lobbying and fighting against state GMO labelling initiatives.[15] As a result, a bill widely known as the "DARK" Act (short for "Deny Americans the Right to Know", but officially named the "Safe and Accurate Food Labeling Act") was recently passed in Congress and Senate. The bill was subsequently signed into law by Obama on July 29th, 2016, overturning GMO labelling laws in four states and putting in its place a highly criticized, unenforceable GMO disclosure law that allows companies to bypass actual labels by using QR codes or 1-800 numbers in their place.[16]

Organic Farming

About four years ago, I took a 6-month leave of absence from my job at Greenpeace and left Toronto to do an organic farming apprenticeship on a farm in Maine. I ended up falling in love with a neighbouring organic farmer and staying in Maine on and off for almost four years, learning the ins and outs of organic farming, something I had always been interested in, but from a distance. Although that relationship has now ended, I feel that my journey with organic farming has just begun. I found that as I learned more and more about the productivity and viability of organic farming as an alternative to our current pesticide and GMO-dependent model of agriculture and as my film was simultaneously progressing, it became increasingly clear to me that I needed to incorporate organic farming as a counterpoint to what I was arguing against. It

[15] "Who Opposes Labelling?" Organic Consumers Association https://www.organicconsumers.org/campaigns/millions-against-monsanto/who-opposes-gmo-labeling
[16] "Flawed GMO Labelling Bill Signed Into Law" Non-GMO Project http://www.nongmoproject.org/blog/flawed-gmo-labeling-bill-signed-into-federal-law/ (July 29, 2016)

wasn't enough to have my mom's small home garden, or even my humble organic farming efforts as a viable alternative to large-scale agriculture.

Figure 3: Film still from *Modified:* Leek harvest

I needed to show the more robust side of organic farming, and interviewing the Martens on their large-scale organic grain farm seemed like a more powerful way to make a compelling argument for organic agriculture, especially given the fact that the Martens were previously conventional farmers who converted to organic in large part due to pesticide poisoning from 2,4-D which is now making a come-back in the new generation of GMO seeds. Further, Mary-Howell Martens has a background in plant genetics and was involved in the very first genetic engineering trials at Cornell University. Their strong foundation in farming and plant breeding gives Klaas and Mary-Howell a unique perspective on GMOs, and I found that they were able to simply and eloquently dismantle the commonly-held myths around higher yields and "feeding the world".

I questioned whether or not to reinforce their testimonies with text on screen, pointing to studies to back up their claims. There are many emerging studies[17] showing that organic agriculture can feed the world, and particularly that organically-grown crops outperform[18] GMO and conventional crops in drought-plagued soils[19]. I debated whether their testimonies alone would suffice. In the end I opted to include mention of the studies in a text card at the end of the film.

[17] John P. Reginald and Jonathan M. Watcher, "Organic Agriculture in the 21st Century" Nature Plants, Article Number: 15221, (February 2016)
[18] Lotter, D., Seidel, R., and W. Liebhardt, "The performance of organic and conventional cropping systems in an extreme climate year", American Journal of Alternative Agriculture 18(3) (2003):146-154.
[19] "The Farming Systems Trial" Rodale Institute (2011) http://rodaleinstitute.org/assets/FSTbooklet.pdf

PROCESS

My interest in filmmaking is firmly anchored in the tradition of social or activist documentary, documentary whose aim it is to expose systemic injustice, draw attention to a pressing social issue and to hopefully create change. However, I am painfully aware that this form of filmmaking can easily swerve into dangerous territory, because the broader motive for the film can take over the field of vision at the risk of bypassing poetry, story, the ephemeral, the magic of what makes a good film. I have seen enough shrill, angry, and emotionally manipulative documentaries to know that this is not what I want to make. However, it is sometimes challenging not to accidentally veer into this line of filmmaking.

When I applied to do the masters programme at York, I had already started thinking about making this film, at the time tentatively titled “Maistory” and later “Genes for Dinner”. During my coursework at York, I struggled to gather the footage I needed. There was very little happening in Toronto on the GMO front at that time. The late 2000s saw a strangely silent gap between the initial outcry and activism that occurred when GMOs were first introduced in the late ’90s and later, around 2010, the growing GMO labelling movement largely spearheaded by Rachel Parent’s “Kids Right to Know” initiative. A lot of the interviews I wanted to conduct involved travelling which I wasn't able to afford. I also found it hard to keep up with full-time course work and a part-time job to make ends meet. It left me with little time or resources to gather my footage. After I finished my coursework, I took a five-month contract with a television production company, to begin paying off my student loan and personal debts. After I finished, I got back to work on my thesis and spent the next five months gathering footage and beginning

the edit. I was making good progress but I still couldn't afford to gather some of the footage I wanted in Europe. Then my dream job came along: Multimedia Producer at Greenpeace Canada. I applied, got the job, and quickly realized that it would leave me with very little time for thesis work. On the other hand, it offered valuable travel opportunities that I could use to my advantage. I filmed my interview with Andrew Kimbrell in Washington, D.C. during a working trip. And much of the French footage was gathered during another working trip to Europe. But what ultimately ground my progress to a halt was that within a month of landing the Greenpeace job, my mom was diagnosed with cancer and a very difficult five months ensued, until she passed away in the fall of 2009.

My mom and I shared a very close bond. She raised me as a single parent until I was seven years old. We shared a passion for food, farming, cooking, and later GMOs. She loved food more than anyone else I know. She delighted in strong flavours, strange new food. She loved nothing more than to plot a meal together, often while standing in the garden, always proudly showing off what she was growing and how she planned to use it in a recipe. Garlic scrapes and red currants would be the bed that a roast duck would lie upon while sizzling away in the oven. A rare tender variety of beans would be lightly steamed and dressed with a little butter so we could fully experience their unadulterated flavour. She would cradle shiny eggplants as if they were the most precious jewels in the world.

When I bought my very first video camera in 2003, my immediate instinct was to follow my mom into her garden. She was a bossy gardener and although I had an early interest in gardening, I never wanted to do it alongside of her because she was too anxious and controlling

about having someone digging around in her soil. So filming in the garden was a different way to be with her and experience the intense satisfaction and even ecstasy that emanated from her in that place.

I became completely absorbed by the beauty of each plant and I would spend hours trying out what I thought were “risqué” techniques with my new camera. I have hours of dramatic swoops and fast zooms, footage of overexposed onion flowers, slow shutter jagged baby zucchinis. I’m quite appalled when I look at it now. It just looks like old standard definition HDV footage that is badly shot. It’s quite obvious that I was trying way too hard to be avant-garde with those garden veggies. But there were the few oddly magical moments (such as the cantaloupe scene illustrated below) and it was a way to get to know my camera and get to know my mom’s garden on another level as well. Unfortunately, most of the footage I have from that era is of the plants themselves. My mom only appears briefly in a few of the shots. This lack of actual footage of my mom in her garden was one of the biggest frustrations for me in the editing process.

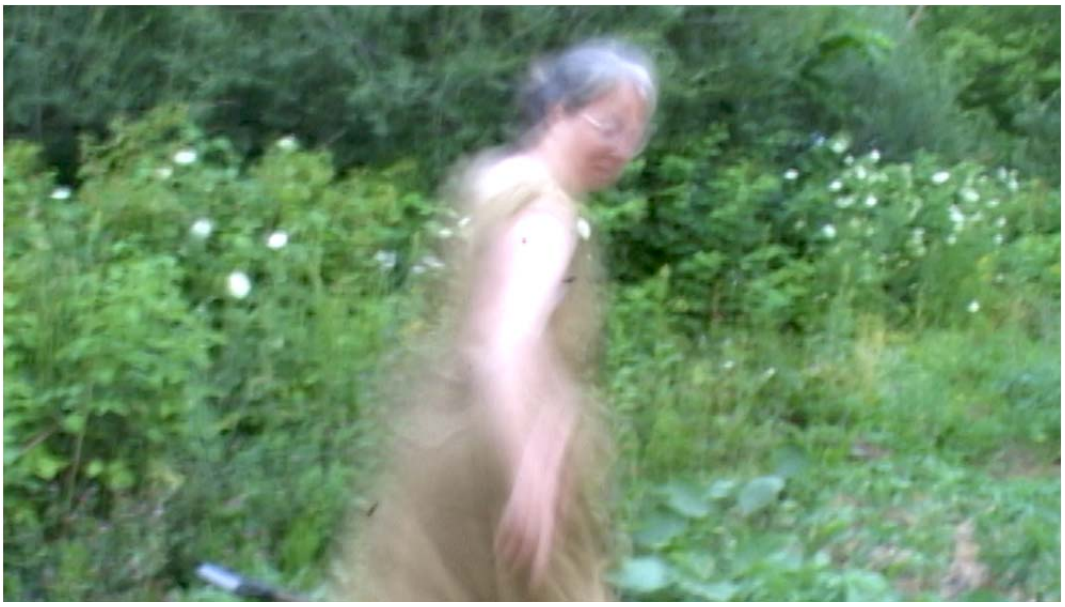

Figure 4: Filmstill from *Modified:* My mom in her garden, after showing me her cantaloupes

During my mom's illness, my supervisor at Greenpeace allowed me to work from home one week out of every month so that I could be with her in Nova Scotia. I had planned to take a leave of absence in October to be with her full-time, but she died suddenly at the end of September, after an unexpected turn for the worse, leaving us much more quickly than we had thought possible. After my mom died, I went into emergency self-care mode for the following year, and keeping up with a painful grieving process and a high-stress full-time job was as much as I could handle. I put the film on hold. It took me more than a year before I could even start looking at the film again. And it took even longer before I was able to begin looking at the footage I had taken of my mom over the years, and the months while she was sick. The footage obviously carried a much deeper significance and weight than it had before. Watching the footage became part of my grieving process, in that incomparable way that video has to capture the essence of a person, their voice, and their expressions. You don't get that from photos. In the years that followed, I

gradually began to chip away at the thesis again, bit by bit, realizing that my mom would now become a larger part of my story than I had previously planned.

She was always going to have a role in the film, but it was never clear to me exactly in what capacity. In fact, around the time I started filming her in her garden, I also began to film her knitting with the plan of making a documentary about knitting. Though it never saw the light of day, some of those knitting shots were valuable for this project. In fact the opening walking shot of the film was shot while I accompanied her to her knitting circle. When she was sick, I was usually too stressed/sad/anxious to put much thought into how I wanted to film her. I just did it. Now in hindsight I wish that I had filmed more, especially of us together. But I didn't realize how limited our time was.

While I was still working at Greenpeace, and initially as a way to celebrate my mom's cooking, I started a food blog a couple of years after she died, creating recipe video vignettes as a creative outlet. I was finding that the Greenpeace videos were exhausting to produce and their subject matter often depressing. The vignettes were a colourful survival tool for me, a way to use my video skills to create something fun and not very cerebral. It was something I did for the sheer pleasure of it.

Figure 5: Film still from *Modified:* Making pear crisp

I began to see the vignettes as a sketchbook of sorts for my film, a way to play with new techniques, to try my hand at stop-motion animation, and to find my own style, my own voice, with the hopes of finding a way to integrate them into the film somehow. I began realizing that it was an important way to connect my love of food to the broader political food issues I was delving into. Four years after my mom died, I quit my job in Toronto, moved back to the east coast and signed a contract with PBS Food, creating essentially the same content for them as I was already doing on my own blog. It was a welcome source of income that allowed me to live rurally and complemented the farming lifestyle I had adopted. It also allowed me enough time to continue working on my thesis, especially in the winters when the farm work died down.

Over nine years, my approach to this film has (inevitably) changed significantly, requiring a frequent re-adjusting of my process along the way, posing special challenges in the consistency and style of the documentary. I came into the film quite high on the do-it-yourself approach of

Jonathan Nossiter's *Mondovino,* which I had just seen at the Sheffield documentary film festival in 2004. It was nominated for the Palme d'Or at Cannes that year and I was completely transfixed, smitten really, when I saw it. It struck me to my core as a style of filmmaking that I wanted to engage in. It had a very handmade aesthetic, and a whimsical, low-budget, director-driven approach that served to demonstrate in a powerful way how forces of globalization and Americanization have homogenized and standardized wine production. Or as Nossiter refers to it, the "McDonaldisation" of wine. Interestingly, parallel observations can be made about the film or the food industry, or any industry that homogenizes and commodifies a mass-created product. Whether it's making seeds or wines or films uniform, the squashing of diversity that is a defining trait of the globalized world in which we live has profound impacts on the inner landscape of our lives.

Other films had already given me a similar appreciation for a kind of homemade approach to social documentary filmmaking: Agnès Varda's *The Gleaners and I* (2000) and Judith Helfand's *Blue Vinyl* (2002). But *Mondovino* solidified the connection I felt to this style. Later, other films inspired me in a similar way: Josh Fox's *Gasland* (2010) and Jonathan Caouette's *Tarnation* (2003). In all these films, there is a certain courage and independence, an element of self-reflexiveness, and a disregard for high-production values.

Having previously directed two short films with the National Film Board of Canada, on both occasions I had experienced the luxury of a full film crew. However, whether it's because I was too young and inexperienced to know how to work within that, or simply because I don't work well within that kind of structure, I had found the experience deeply stifling and uncomfortable. I

felt coerced into a particular way of gathering images that felt forced and entirely disconnected from my subjects. In fact, I found the second directing experience to be downright painful, almost to the point of feeling somewhat traumatized by it. I did not see eye-to-eye with the producer who was very condescending in her approach. I remember feeling like she was sucking the life out of my project to turn it into a flat, generic television half-hour time filler. The experience drained away every ounce of self-confidence I had in me and I came out of it feeling terrible about myself and my capacity to make a film. This project, in a way, became my way of licking my wounds from that experience, of trying to regain a sense of myself and my own ideas. As part of my attempt to recover from my NFB downward spiral, I purchased my first video camera which gave me the much-needed first-hand experience of learning to gather my own footage, instinctively, messily, haphazardly. Owning a camera was exciting and empowering. Initially, I simply gathered images of my mom's garden. This was followed by a year-long trip to France, Italy and Tunisia where I gradually became more comfortable with filming and interviewing in a style that felt more intimate. By the time I started the MFA program, I felt somewhat ready to tackle this film on my own though when I look back on it, I still feel like I had no clue what I was doing.

I jumped into this production trying to mimic the style I admired so much in *Mondovino*. The handheld, carefree camera work conveniently meant in my mind that I could simply get my roommate or really anyone with a bit of curiosity and visual savvy to shoot for me. That was wishful thinking, though at the time, I thought the results of that approach were surprisingly interesting and potentially workable. I tried to seek out organic ways of speaking with people without being constrained by the confines of a rigid interview, though I found this very difficult

to achieve. And while there was some distant potential to become more comfortable in this approach if I had stuck to it, I ultimately lost confidence in it. I was worried that it just looked like badly filmed material, that I wouldn't be taken seriously, and it became harder and harder to "keep up with" especially as I began to work with more seasoned camera people and to face the constraints of interviewing experts in their office, at times all by myself. I often felt too worried about "messing up" the interview to shoot it handheld. So I started giving in and putting the camera on a tripod. Gradually, I abandoned my initial laissez-faire, organic approach to the camera work, especially with interviews, and slipped into something a little more conventional. I didn't have the courage to see my original approach through. I was worried it would result in a sloppy-looking film. The realization eventually sank in that I was likely not going to be able to make the kind of film that I initially had in mind. I was no Jonathan Nossiter and I was still struggling to find my voice and my style. I also lacked the time and resources needed to consistently work on this project which meant I was ending up with disjointed footage, shot in different formats as the camera choices available to me increased over time. About halfway through the production, I switched to DSLR cameras which have a very different look from the HDV single lens cameras I had been using up until that point. Often, stylistic choices felt out of my control due to my limited options when it came to finding cinematographers I could afford and finding the time / locations to properly interview people. Unfortunately, this means there is a distinct lack of consistency in the footage I gathered and my overall approach to the film over time. In the end, as both my editors have kindly pointed out, this may not be as big of an issue as I have made it out to be. Since it makes use of home video, archival footage, animations and cooking sequences, the "look" of the film becomes a patchwork quilt of sorts, and if the story is strong enough, this can potentially work aesthetically and structurally. However, I am always

reminded of the words of Walter Murch from his book *In The Blink of an Eye* where he describes keeping a consistent filmic approach:

> Don't start making a chimpanzee and then decide to turn it into a human being instead. That produces a stitched-together Frankenstein monster. (13)

I certainly hope that in the end, my film leans a bit more towards the patchwork quilt concept than the Frankenstein monster. (Though a Frankenfilm talking about Frankenfood is an interesting idea!).

One of my biggest battles with this film has been to reign in a tendency I have to be overly issue-based as opposed to telling a visual story. I chose a topic and then imposed a narration over it. I think my natural inclination was to look for experts rather than stories and as a result, for a long time, the film did not feel as compelling and cinematic as I hoped it would to be. Though with some crucial last-minute shoots, I felt that the film did manage to find the visual and narrative balance that I been striving towards. This may seem like a no-brainer, but it's perhaps the biggest lesson I learned from making this film. I wish someone had said to me right from the start, "Seek out stories rather than experts!" People probably did say that along the way, but I hadn't properly internalized and digested it until the late stages of finishing this film. However, despite the fact that I would approach things differently with a subsequent project, I did end up finding a certain level of comfort in the language of the autobiographical essay documentary where the filmmaker's own journey for answers provides both the skeleton and the heart of the film, in the style of documentaries such as Michael Moore's *Roger & Me* and Judith Helfand's *Blue Vinyl.* Another example is my classmate Kathleen Mullen's autobiographical documentary, *Breathtaking*, which I had the pleasure of working on and which parallels my own project in the

intertwining of a personal family story involving the loss of a parent with broader political issues.

Ken Burns says, “We tell stories to continue ourselves”. I would add that we tell stories to continue not only ourselves but the people whose stories we tell. Telling this story felt very much like a way of continuing my mom’s passion and the work she did in her life. Her work could only be measured in small personal acts: the products she chose to buy or not buy, the type of farming she supported through her purchases of food, the letters she wrote to local newspapers and to politicians, speaking with friends, purchasing and then donating books on GMOs to our local library so the information would be available to others. These are things that are easily forgotten after someone dies. But they leave a quiet legacy around you, and in my case, a desire to do more to bring this issue to light, as a sense of personal urgency around an issue that is misunderstood but that affects us all, as well as out of a desire to expand on ideas and actions my mom had already undertaken. The biggest heartbreak about losing someone you love is the thought that people will forget them and forget all the knowledge and the wisdom that they worked so hard to acquire during their lifetime. In this sense, film is a way of continuing what my mom started. But even more than a thirst for knowledge and creating change, my mom showed me how to love and to delight in the world, especially when it comes to culinary pleasures. And in the end, isn’t it by connecting to the things we love that we want to defend them? We inherently want to protect the people and things we feel most connected to. By teaching me to deeply connect with the act of eating, my mom also instilled in me a desire to stand up for food, and to challenge the modification of food for the financial benefit of large corporations.

THE SPECIAL CHALLENGE OF FIRST-PERSON FILMMAKING

For the longest time, my experience making this film felt painfully clumsy. Like someone who has a vaguely beautiful painting in their head but all that comes out when they put brush to paper are a series of scribbles that are embarrassing to look at. Making a personal film confronted me with my own ego and quite frankly, a gnawing background hum of self-loathing. But despite the difficulty of being constantly confronted with my own self, I felt compelled from the very beginning to make this film as a personal narrative. There was never a question that it could be anything else. In some ways, it was something I needed to do to exorcise a demon from me. Of course, now that it's almost done, there is this nagging feeling of not really wanting anyone to actually see this exercise in exorcism. Which flies in the face of the whole reason for making it: to generate discussion and engagement around GMOs. But there is something absolutely terrifying about putting myself out there in this way. I've never done anything quite like it before in my life. Though blogging does also involve a certain level of self-exposure. Despite all my insecurities, I do seem to have a fundamental desire to share my stories and connect with others through different mediums of public engagement.

In discussing his film *Fotografias* (2007), Andrés Di Tella defends first-person filmmaking as follows:

> There is a kind of complaint directed at authors of personal or autobiographical documentaries, as if we were egotists or victims of extreme narcissism. (There is surely narcissism at work, how could there not be? But curiously, nobody talks about a worrying lack of self-esteem or a negation of intimacy when a filmmaker makes one of the more 'objective' or 'social' kind of documentaries). I really think it is the other way round. To put into a film autobiographical substance, to sacrifice one's own family, to

> expose intimacies of experience, all of that is ultimately a kind of public offering. An autobiographical documentary is a curious act of responsibility. I assume responsibility for this story. I answer for it with my life. I answer for my ideas about film and art (and life) with my own life. I lay down my own body there, with no surrogates. And of course, in doing so, I confess my own limitations. (Lebow, 35-36)

Figure 6: Film still from *Modified:* Apple picking

My initial goal was simple enough: to make a film exploring the topic of GMOs that took a more personal and less dogmatic, journalistic, conventional approach than the films that already existed on the topic. The problem was, there was no inherent compelling personal narrative story when I started off. My own journey exploring the topic was the narrative thread.

As I previously mentioned, my primary challenge in making this film stemmed from the choice of making an issue-driven film, as opposed to an inherently narrative-driven film. Unless you are a brilliant storyteller or filmmaker, this is setting oneself up for a long uphill battle. Trying to force a narrative onto one of the topics I care most about in this world has been a painstaking,

often paralyzing process. From the beginning, this film ran the risk of being a long series of talking heads, explaining the ins and outs of our GMO regulatory system, with shots of me travelling in between, not exactly riveting cinematic material. With the limitations of frequently having to interview experts in their offices, I began to feel locked into gathering cutaways of the person's hands or fake cutaways of the subject working at their computer or of me listening to the person speaking, gimmicks I have always wanted to avoid relying on at all costs. By framing all my talking heads interviews as stopping points on my personal journey, I had hoped that there was a narrative thread strong enough to carry people through the film.

Interestingly, it was not until well after my mom died and I had embarked on the editing process that I began to realize that the heart of the story was really in our relationship and in her passing of the baton to me. That the richness of my story would be anchored in the values and in the perpetual questioning my mom carried within her and eventually passed on to me is something I am still digesting to some degree. It's still challenging for me to articulate it in words that don't feel trivial or clichéd and that encompass the full meaning that this holds for me. I often find that other people are better able to describe how my film is rooted in this bond my mom and I shared. I suppose that in part it's because it still feels odd at times that part of what has made my film "better" is a loss that caused me so much pain. I have struggled with how much of my mom to include, how much of her illness, how much of her death. Because most of the footage I had of her is when she is ill, it made for limiting choices in the edit room. I kicked myself a thousand times during the editing process for not having gathered more footage of her when she was healthy, for focusing my camera so much on her garden plants and so little on her actual physical self. Especially because, being my mom, the one person I've known since my birth, I never fully

appreciated what a vivacious and hilarious presence she could be in front of the camera. She always told me she hated being filmed, so I mostly shied away from pointing my camera directly at her. But in truth, I think she relished it a bit[20] and she had an awkward, self-aware, but very authentic and loveable presence in front of the lens.

Figure 7: Film still from *Modified:* the "prologue" where my mom confesses she has always wanted to be in a film

One of the challenges in working with the footage I had of my mom was witnessing how my own relationship with that footage changed over the time I spent working with it. When I initially began looking through the footage, a couple years after she died, I was flooded with raw emotion and there was a whole new grieving process I had to go through. Over the next two or three years I spent working with the footage on my own, that grief came and went, often unpredictably and unexpectedly. But over time, I became somewhat numb to the footage. The editing process can be a cold, heartless operation. You are constantly interrupting, fast-

[20] As my mom says in the opening line of my film, *"I've always wanted to be in a film"*.

forwarding, scrubbing, skipping over, cutting out, manipulating. Your footage sometimes feels like just a building block for your whims and fancies and you become so overly familiar with it that it loses its preciousness, its ability to pierce through you. Luckily there were moments, especially after I had handed my film over to new editors, that their fresh use of the footage surprised me, caught me off-guard, and it regained its power over me somewhat. But this whole transformation of my relationship with the footage of my mom was for me a very difficult part of the process.

The filmmaking stalled so many times over the years that I often wanted to give up altogether. What eventually forced me to get the film done is that I wanted desperately to start all over again, but with cohesive footage, based on everything I had learned with this project. I wanted to start new projects, whether film or otherwise. But this one kept holding me back, pulling me down. After nine years, it had become a real thorn in my side. I realized the only way I would get it done was to give up on all hope that I would make the delightful *Mondovino*-inspired film I had imagined I would make, the film that would make everyone stop eating GMOs, that would shut down Monsanto, that would transform our agricultural system and change the world. I'm exaggerating of course but my motivation for making this film was very much driven by these grandiose ideas that if I could just make a film good enough to reach a lot of people and elicit a reaction out of them, it would have the impact I wished for. Making this film was in many ways my attempt at fighting against the feeling of powerlessness I am confronted with every single time I step into a grocery store or read another headline about how GMOs are going to feed the world. But what happened, as probably happens for many people trying to create something meaningful, is that the weight of my own lofty goals felt unbearable to me most of the time.

Adding to that heaviness was the fact that after my mom died, I began to feel very much that this was our shared project and that I was making this film to honour her life and her memory. Not exactly an easy mission. That became an added source of pressure I put on myself about how good the resulting film needed to be. If I made a bad film, I would not be honouring my mom as she deserved. In the end, I had to let it all go: my ego and my delusions, my wanting to make a perfect film that lived up to everything my mom fought for. For me to be able to finish this film, it had to be about nothing more than getting the film done for the sake of getting it done and then moving on to my next projects. It was a cold-hearted approach but it got me back on track every time I felt toppled by the weight of my own expectations.

In one of the most dire moments when I stopped seeing any value in the film, I realized that I needed a lifeline, a support person, someone who believed in the film even when I didn't and who could cheer me on and help me steer it in the right direction. I sought out Camelia Freiberg because I am a long-time admirer of Atom Egoyan's films, many of which she has produced. I had also been moved by her own work (*A Stone's Throw*) which screened at TIFF while I was doing my coursework and I knew she had moved to Nova Scotia to embark on a new career as an organic farmer. We had crossed paths several times over the years and I was always struck by how closely our common interests in film and farming intersected. I had a hunch that if she wanted to take on the project as an executive producer, I would find an emotionally-supportive and savvy mentor, with an in-depth understanding of both filmmaking and agriculture, someone who could help me make the best film I could with the limited resources I had. I showed Camelia my rough cut in the fall of 2015, followed by a lengthy phone chat. I remember hanging up the phone and immediately feeling less alone. She agreed to take on the role of executive producer.

When we met in person to go over the film in more detail, we realized that she had actually met my mom shortly before she passed away. She had even bought one of her colourful hand-knit hats. It was one of those “small-world” Nova Scotia moments and it felt auspicious and very meaningful to me. During that first meeting, I showed Camelia some family photos and she asked to see some of the home video footage of my mom when she was sick. Up until that point, I had been hesitant to use any footage of my mom in the later stages of her illness, when she had the steroid “moon face” that many cancer patients get. I didn’t want to show her in that light. I felt it was too disturbing, and that it gave a limiting impression of who she was, for those people who didn’t know her as a vibrant, healthy person. But Camelia convinced me that by establishing my mom as a strong character from the start of the film and letting the audience get to know her when she was in good health, they would know her more wholly, and I opened myself up to the idea of incorporating a lot more of my mom into the film, including those raw images from when she was sick. I initially questioned whether she would have wanted me to use those images of her, but the answer was quickly yes. When she lost all her hair from the radiation treatments and her face began to swell, my mom had no hesitation about being in public as she was. She staunchly refused to cover her hairless head, and was almost defiant about the need for people to see what cancer looks like.

One of the biggest obstacles in making this film is probably in caring too much about my subject, in wanting to say everything on the topic. One of the most useful things said to me was when John Greyson pointed out in some early rough cut feedback notes that there are already some great essay-documentaries on the topic of GMOs, therefore I don’t need to take all the weight on

my own shoulders in feeling I have to say everything that needs to be said on this topic. That helped me give myself permission to cut some things out and stay on focus in my editing process.

At the heart of my difficult relationship with filmmaking is always the struggle between wanting to use film as a political tool for change and as a visually meaningful and poetic method of self-expression. It means I sometimes have difficulty keeping my voice from becoming strident, and from letting a kind of overly earnest desire to convince seep through to the surface. My mom's own voice was also overly shrill at times, in her desire for social change (frequently causing more than a few eye rolls around the dinner table). Maybe it's the curse of activists. First drafts of my film had that desperate grating voice that is so hard to listen to and engage with. But I liked what Camelia said when I showed her my awkwardly narrated rough cut: don't censor anything at this stage. There's something to be said for getting all the feelings, all the story out there, in all its uncomfortable awkwardness. And then shaping it into something more approachable, hopefully with the essence of the raw energy still present but in a more palatable way.

As a personal narrative story, narrating the film myself seemed like the obvious choice. Especially given that one of my challenges was to deliver basic information without being overly didactic. Many of my interviews were definitely in the realm of "overly didactic". I also needed to explain certain things early on in the film, for instance establishing what exactly a GMO is.

I resisted narration for a long time, but I finally accepted that it would probably be unavoidable. My first attempts at recording narration were embarrassing. I felt uncomfortable and hated the sound of my voice and everyone who watched my rough cut agreed. My thesis committee suggested that I look to other possibilities, such as text on screen, or creative devices like fictitious letters between my mom and I. Friends suggested hiring an actor to record the narration and take the place of my voice. These all seemed like great suggestions, and I tried them for the most part (except for the actor). The only thing that seemed to potentially work was creating a couple of fictitious voicemails between me and my mom, to add to the real ones I already had. As time went on, I realized that as painful and unimaginative as a first-person narration felt to me, it seemed like what the film needed. I also came to the realization that the process of developing a narrative and voice that felt authentic and true to myself, was actually quite a valuable exercise in self-awareness.

When I watch *Gasland*, I'm a little bit in awe of Josh Fox's low, laid-back voice (almost to the point of sounding blasé at times). I admire this nonchalant, confident tone. It offsets the urgency of the material somehow. There is earnestness in my own voice that I am uncomfortable with. I want to sound cool and detached like Josh Fox, but that has not happened. Working through narration has been an awkward process. I recorded and re-recorded narration so many times. I wrote and re-wrote. Camelia suggested journaling exercises and improvising on my narration with someone in the room, in other words speaking "to" someone. My editors recommended speaking into the microphone more softly and with the microphone as close as possible to my mouth. Finally, I got to a place with it that began to feel a bit more comfortable and authentic. It

turned out to be one of the most confidence-building and valuable parts of making this film for me, an exercise in self-acceptance.

AESTHETIC APPROACH

It would be misleading to claim that I went into this film with a clear visual design. The aesthetics of the film emerged over time and as previously mentioned display more of a patchwork of styles as anything cohesive. I've always liked the idea of "film trimmings" and how Arthur Lipsett constructed stories from the "un-useable scraps" found on the cutting room floor. My own interest is not so much in constructing a film from found footage but rather incorporating the "messy bits" of my own footage into my narrative because they inform the characters speaking, the maker, and offer clues into how the film was made.

It's no secret that the things people say "off-camera" are often better and more interesting than when the camera is turned on. I find the same can happen with footage, when a shot isn't planned, it has its own kind of beauty. In my mind, I often return to the delightful moment when Agnès Varda accidentally leaves her camera running and then marries the resulting footage to a jazz track and calls it the "dance of the lens cap".

Figure 8: Film still from *Modified:* a “messy” bit where I had left the camera running accidentally

As a “learning filmmaker”, I especially did not want to hide the fact that this was going to be a homemade, low-budget and personal investigation film. I like films that show their rough-sewn seams and I feel drawn to a cinematography and editing style that reveals the filmmaking process, with the playful opportunities this can offer up.

I knew that to counteract all the information-heavy talking heads in my film, I would need to ground it in a more personal and visually rich story. My goal was that all the visual elements involving cooking, gardening, and the animations would lend whimsy, poetry, and lighten an otherwise heavy and serious topic. The other goal was to remind the viewer that when we talk about GMOs and the regulatory system and the politics of food, we are not talking about something abstract. We are talking about the real food we grow, cook, and eat on a daily basis. I wanted to use the garden visuals of my mom’s and my own garden as a way to bring the viewer into the earthy natural world, a place we all inherently know in our bones, no matter how

disconnected we've become from it. I wanted to bring the viewer into my mom's universe and for these visuals to contradict the stark world of monoculture landscapes - whether inside (grocery stores) or outside (industrial farms) - that provide much of the food we end up with on our tables.

Figure 9: Film still from *Modified:* A recreated harvest sequence from "my mom's garden" (in fact Camelia's garden)

From an early stage my thesis supervisor Barbara Evans was very encouraging about using more animations, more cooking and farming visuals, and bringing out my mom's presence in the film. This strengthened my resolve to ground the film in these elements.

The home video footage which I hadn't even really planned on using in the beginning, ended up being one of my best sources of material. Both my editors were able to unearth some gems (which I hadn't initially seen as valuable) that bring much-needed humour and lightness to the film, strengthening both my mom's and my characters.

Figure 10: Film still from *Modified:* My mom goofing around in family home video footage, circa 1991

Unfortunately, I had a limited amount of family home video, and specifically nothing before my teenage years. Hence the recreation of Super 8 family video, which I use to illustrate my mom's pea story at the beginning of the film as well as the early connection I had to food through my mom's garden. I wasn't sure about how this would turn out but Super 8 is very forgiving and even though there are actually three different child "actors" seen in the early footage, no one seems to notice that they are not the same kids or question that it might not actually be me. I tried to film this footage in a shaky handheld way with lots of zooms, as I imagined someone with little camera experience would film it. Working with my second editor, Mike Munn, who edited Sarah Polley's *Stories We Tell* was interesting in that he shared a story about the use of Super 8 family archive recreations in that film. He explained how their initial attempts at Super 8 recreations did not feel authentic until they realized that the main character needed to look at the camera every now and then, because the nature of home video footage is this intimate acknowledgment between the person in front of and behind the camera. This was something I

had intuitively encouraged in the two first girls I filmed. The third had brown eyes and I tried to avoid having her facing the camera directly since it could have been a giveaway that it was not the same child in all the shots.

Figure 11: Film still from *Modified:* A Super 8 recreation of one of my childhood moments, as told by my mom

A few possible leitmotifs kept coming up in the material that I wanted to make use of, but I didn't really have enough of these moments to build them into the film in a convincing way. I tried to integrate them into the film but they ended up feeling forced. One was the presence of people's dogs or pets (a nod to *Mondovino*), another was people combing their hair before interviews (something that frequently happened but which I only captured twice). Another was the difficulty people have in pronouncing my name which occurred at the beginning of almost every interview. I thought it could be a funny aspect of the film but it came off feeling distracting and self-centered so I only kept it for Gilles-André Perron's interview. Then there was a constructed leitmotif I had considered using in which I would ask each interview subject to describe their favourite food. My plan was then to prepare that food, animate it, and use it as an

introductory device for each character. But somewhere along the way, I forgot to do it systematically and it felt too forced in any case. Another little interesting pattern that kept emerging (interestingly, mainly when I would interview men), is that at the beginning of an interview, the interviewee would often seem alarmed by the small handheld camera, or there was something about me that would cause them concern about how I was going to manage the interview. Questions like, “Are you sure the microphone should be here?”, “Do you know what questions you’re going to ask me?”, “Is that how you’re going to hold the camera?”. In all fairness, I often felt like I had no idea what I was doing and often questioned myself as well. But it was a noteworthy reoccurrence, nonetheless, one which I opted not to incorporate systematically, though it can be briefly observed in a few moments in the film.

One device that did seem to work was eating in front of the computer while watching parliamentary debate or Senate footage which was either dry on its own, or of bad image quality. In thinking of ways to address this governmental archival material, I immediately liked the idea of eating at my computer, something I am frequently guilty of (I probably ate several hundred meals in front of my computer while making this film so it seems fitting somehow) and I liked the commonality of this type of moment which I think people can relate to. But more specifically, the purpose was to draw a direct connection between the food I’m eating and government policies that are “on the table”. People often feel disconnected from policy talk and governmental debates; they inherently feel exclusive to the average person. My hope is that by bringing them into my personal world in this way, the outcome of these votes and debates on food policies takes on a more urgent and relevant tone. So this became a device I repeated throughout the film.

Another device that ended up working well and that I deeply regret not beginning from the moment I started working on this film nine years ago was the use of calls made to Health Canada in pursuit of an interview. The whole experience of trying to get Health Canada to participate in the film bordered on the farcical, a film in and of itself. I have never quite experienced that level of incompetency from any company or government agency and the experience was truly crazy-making. All in all, it lasted just over two months before I got a conclusive answer, but if I had not been so insistent, it would likely lasted much longer than that because they were systematic about not returning my phone calls or not handing off my request to the appropriate people. I feel that stylistically and narratively, the calls work well because they offer up a little bit more of my personality and the frustrations of trying to get answers.

A WORD ON EMOTIONALITY AND GENDER

GMOs can be an incredibly divisive and hostile territory. Those who are in favour of GE foods often speak very scathingly of "the anti-GMO's". People concerned about GMOs are often accused of being anti-science and being overly emotional, not grounded in facts, but living in a world of unfounded fears. This theme came up over and over throughout my research and interviews: emotion versus science. In filmmaking, emotion seems to trump information, at least some of the time, and I found myself riding a delicate line between the “emotional” world and the “rational” world of the film. As a little girl, I remember my grandfather asking me what I wanted to be when I grew up. When I told him that I wanted to be a politician so I could change the world, he laughed and said I could never do that line of work because I was too emotional. I remember feeling angered and puzzled by his words, and though I didn't have a word for it at the time, I see it now as a patriarchal way to make me understand from a young age that politics is not a domain for emotional girls. In this kind of worldview, emotions are seen as a form of weakness, as opposed to a courageous way of connecting more deeply to the world around us. I see the same kind of attitude in the GMO debate which (although these roles can also be reversed) often involves men telling women they are reacting to the issue on an emotional level rather than a rational / scientific level. This was exemplified in my interview with Dr. Surgeonner, President of Ontario Agri-Food, an important interview in my film because of how few pro-GMO voices would actually speak with me on camera. (Or as my editors took to calling him, my “bad guy”). Dr. Surgeonner consistently interrupted me, spoke down to me, told me that I was not doing my research properly, and that I did not know anything about science. I found that his interview revealed so much about a particular kind of aggressively patriarchal way of seeing the world, a philosophy that directly translates into the chemical-intensive agriculture that

has become our dominant food production method. For these reasons, I felt that it was very important to ground my film in solid fact-based perspectives while at the same anchoring the film in a rich emotional and visual landscape, illustrating that the two are not mutually exclusive.

POST-PRODUCTION

After over a year of editing the film myself, I became exhausted with my own approach and I felt the strong need for a seasoned editor to come on board, either as a story consultant or to physically edit the film. I searched far and wide for almost four months and finally found Avril Jacobson, who edited Chelsea McMullan's *My Prairie Home*, and whose other work I also admired. After she watched my rough cut, we spoke on the phone and she agreed to take on the project, estimating about 4 to 6 weeks of work would be needed to bring the project to picture lock. I moved to Toronto to embark on this part of finishing the film, thinking I would complete the film in a few months of hard work. For the first two weeks, Avril and I looked at raw footage, my rough cut, and assembled a paper edit. After that initial two-week period, I took a major step back, wanting to give her the creative space to take the film to a new place.

In total, our editing process lasted nine weeks, with a one month hiatus towards the end so that I could raise more funds to pay for editing, as well as gather additional footage. I launched an Indiegogo campaign during this period in order to help me cover the editing costs, which I had realized were going to be much more than I had originally estimated. This nine-week editing process was very challenging but once we had a functional structure established and received positive feedback from my thesis committee, we began to make swift progress. After nine weeks of editing, Avril signed off as she had another project booked. We agreed that if any additional editing needed to be done, someone else would do it.

The project was getting closer to picture lock but definitely was not there yet. For a few weeks, I re-familiarized myself with my project, which was now in a different editing programme: Adobe

Premiere. This presented an added challenge since I had never used Premiere and we had converted my own rough cut from Final Cut Pro 7 which is now essentially obsolete. I learned Premiere on the fly and did my best to edit from where Avril had left off. I was able to achieve a lot during the ensuing few weeks of editing on my own. I felt a renewed sense of ownership and direction on my project. During this period, I took a quick trip home to Nova Scotia to gather some remaining images I was missing: sending off my mom's ashes and some more gardening and harvesting visuals. The film felt like it was really coming together but there were still some major structural challenges that remained in the story and it was clear to me that I needed the support of a seasoned editor to bring the film to picture lock.

Luckily, shortly before Avril had come on board as editor, Camelia had brought Mike Munn in as a story consultant and he had viewed my rough cut and provided very valuable feedback. At the time, he had his hands full with another project but it turned out that he had a short window of time shortly after Avril finished. He was able to work with me for a full week. In just five days, Mike did wonders for the film, bringing it very close to picture lock, contributing new elements and lending poetry and drama to scenes that previously fell flat. He subsequently did 2 more days of editing to bring the film to picture lock.

One challenge I had throughout the post-production phase was realizing when to stop filming. Even as we were in the middle of editing, I was calling Health Canada to secure an interview, gathering my final interviews with Lucy Sharratt, Conrad Brunk, and the Martens. Meanwhile, the DARK Act was being voted on and subsequently signed into law by President Obama. At the same time, there were constantly evolving developments on the GMO front. A new, more precise

genetic engineering technology called CRISPR was being hailed as a game changer and it was hard to imagine not making mention of it in some form or another in the film. Golden rice, a genetically engineered rice being developed to fight Vitamin A deficiency in developing countries was making headlines again after over one hundred Nobel Prize Laureates were convinced (in a very highly publicized, carefully timed, and well-orchestrated industry-backed PR tour de force)[21] to sign onto a letter asking Greenpeace to end its opposition to golden rice and GMOs. Golden rice has been a poster child for GMO developers and I had always wanted to address it in the film but it opened up a giant can of worms. I didn't know how to approach the subject in passing, without it taking over the film, especially given that it is not directly related to GMO labelling and the governance and democracy issues I wanted to focus on. Golden rice deserves an entire documentary film to itself. Anything less doesn't seem to do justice to the complexity of issues it brings up. Meanwhile, Monsanto had for the first time released its first generation of Dicamba-resistant soybeans with disastrous consequences. Dicamba is a powerful herbicide known to be highly drift-prone, meaning it can volatize and end up miles away from the target crop on which it was originally sprayed. The summer of 2016 saw Dicamba drift harming hundreds of thousands of acres of a broad assortment of crops not resistant to the herbicide[22]. I badly wanted to cover this unfolding story and incorporate it into my film but I lacked time and financial resources to travel to the affected areas. Finally, just as I was finishing the film, Bayer had offered to buy Monsanto for $66 billion and one of the largest agri-chemical

[21] "Pro-GMO campaign exploits Nobel laureates to attack Greenpeace and fool the people", Claire Robinson, GM Watch http://www.gmwatch.org/news/latest-news/17077-pro-gmo-campaign-exploits-nobel-laureates-to-attack-greenpeace-and-fool-the-people (June 2016)

[22] "Dicamba, Monsanto, and the Dangers of Pesticide Drift: A Modern Farmer Explainer", Brian Barth, Modern Farmer, http://modernfarmer.com/2016/08/dicamba/ (August 9, 2016)

mergers in history was about to take place. It’s an ever-evolving story that is bound to get only more complicated in the years to come. One has to draw the line somewhere.

CONCLUSION

I'm still not sure yet if I'm "happy" with my film. I'm happy that it's finally almost complete. I still cringe every time I watch it. Occasionally I watch it and think "Hey, I'm on to something". Those are nice moments. It has certainly been difficult and painstaking to try to figure out how to tell my story. All I can say is that I had a story to tell and I did it to the best of my ability with the resources available to me. I hope I can close the door on that story for some time, though it continues to unfold with ever more intricate issues being raised. I've learned a tremendous amount by making this film, on a personal level, about GMOs, and about how to engage people in a language that hopefully doesn't alienate them. For that, I'm very grateful to have persisted with it. I only wish that my mom could see it.

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